

AMENDMENTS TO THE WRITTEN DESCRIPTION

Please replace the paragraph at page 1, line 25 with the following amended paragraph.

Polyamide has been used as the material for ~~forming~~ molding electronic device members, because of its moldability into a desired shape after being molten under heating. In general, the polyamides widely used for the above purposes include nylon 6 and nylon 66. These aliphatic polyamides, however, are not sufficiently resistant to heat as the materials for the surface-mounted members, which are exposed to high temperature, although having good moldability. The surface mounting, therefore, needs highly heat-resistant polyamides, which has led to development of nylon 46. It is more resistant to heat than nylon 6 and nylon 66, but has a disadvantage of high water absorptivity, which may cause problems. The electric or electronic device member of nylon 46 resin composition, when it absorbs water, may undergo dimensional changes caused by the moisture, and blister under heating during the reflow step. In order to solve these problems, an aromatic polyamide has been developed, as disclosed by Japanese Patent Laid-Open Publication No.53536/1984. It is derived from an aromatic dicarboxylic acid, e.g., terephthalic acid, and an aliphatic alkylene diamine, and is higher in resistance to heat, mechanical strength and rigidity and lower in water absorptivity than nylon 66 and nylon 46.

**Please replace the paragraph at page 3, line 23 with the following amended paragraph.**

Japanese Patent Laid-Open Publication No.320503/1993 discloses ~~defines~~ number- and weight-average molecular weights of polybrominated styrene, discussing that mechanical properties deteriorate as they decrease and flowability decreases as they increase, and that a flame retardant preferably has an average diameter of 20 $\mu$ m or less, more preferably 10 $\mu$ m or less, when it is dispersed in a polyamide resin composition. However, it is silent whether or not size of the flame retardant dispersed in the polyamide resin composition is concretely measured. The inventors of the present invention have measured the particle size to find that it is very large. The specification is also silent about the concrete method for finely dispersing the particles and concrete discussion on the relationship between the particle size and composition properties.

**Please replace the paragraph at page 4, line 7 with the following amended paragraph.**

The invention has been developed to solve the problems involved in the conventional techniques. It is an object of the invention to provide a polyamide composition excellent in flame retardancy, good in flowability and high in toughness toughness.

Please replace the paragraph at page 4, line 14 with the following amended paragraph.

The flame-retardant polyamide composition of the present invention comprises:

(A) 20 to 80% by weight of an aromatic polyamide, composed of recurring units of dicarboxylic acid component unit and diamine component unit, the former composed of 30 to 100% by mol of a terephthalic acid component unit and 0 to 70% by mol of an aromatic dicarboxylic acid component unit other than terephthalic acid and/or 0 to 70% by mol of a C<sub>4</sub>-C<sub>20</sub> aliphatic dicarboxylic acid component unit and the latter composed of an aliphatic diamine component unit and/or ~~and~~ an alicyclic diamine component unit; and having an MFR of 40 to 300g/10 minutes, determined at a load of 2,160g and temperature of 10°C plus melting point, and melting point exceeding 290°C;

(B) 5 to 50% by weight of an inorganic reinforcing agent,

(C) 5 to 40% by weight of a bromine-based flame retardant, containing at least one type of polybrominated styrene obtained by polymerization of brominated styrene, and

(D) 0.1 to 10% by weight of an antimony-containing compound and/or zinc-containing compound oxide, the components (A) to (D) totaling 100% by weight,

wherein, the polyamide composition has flame retardancy equivalent to V-0 determined in accordance with the UL-94

specification, and the bromine-based flame retardant has a number-average particle size of less than  $0.90\mu\text{m}$  in the polyamide composition, when it is pelletized.

**Please replace the paragraph at page 5, line 9 with the following amended paragraph.**

The flame-retardant pelletized polyamide resin composition of the present invention comprises:

(A) 20 to 80% by weight of an aromatic polyamide, composed of recurring units of dicarboxylic acid component unit and diamine component unit, the former composed of 30 to 100% by mol of a terephthalic acid component unit and 0 to 70% by mol of a  $\text{C}_4\text{-C}_{20}$  an aromatic dicarboxylic acid component unit other than terephthalic acid and/or aliphatic dicarboxylic acid component unit and the latter composed of an aliphatic diamine component unit and/or ~~and~~ an alicyclic diamine component unit; and having an MFR of 40 to 300g/10 minutes, determined at a load of 2,160g and at a temperature of  $10^\circ\text{C}$  plus melting point, and melting point exceeding  $290^\circ\text{C}$ ;

(B) 5 to 50% by weight of an inorganic reinforcing agent,

(C) 5 to 40% by weight of a bromine-based flame retardant, containing at least one type of polybrominated styrene obtained by polymerization of brominated styrene, and

(D) 0.1 to 10% by weight of an antimony-containing compound and/or zinc-containing compound oxide, the components (A) to (D) totaling 100% by weight,

wherein, the polyamide extracted with concentrated sulfuric acid from the pelletized polyamide resin composition has a viscosity of 60 to 110ml/g.

**Please replace the paragraph at page 5, line 29 with the following amended paragraph.**

The formed article of flame-retardant polyamide composition of the present invention comprises:

(A) 20 to 80% by weight of an aromatic polyamide, composed of recurring units of dicarboxylic acid component unit and diamine component unit, the former composed of 30 to 100% by mol of a terephthalic acid component unit and 0 to 70% by mol of an aromatic dicarboxylic acid component unit other than terephthalic acid and/or 0 to 70% by mol of a C<sub>4</sub>-C<sub>20</sub> aliphatic dicarboxylic acid component unit and the latter composed of an aliphatic diamine component unit and/or ~~and~~ an alicyclic diamine component unit;

(B) 5 to 50% by weight of an inorganic reinforcing agent,

(C) 5 to 40% by weight of a bromine-based flame retardant, containing at least one type of polybrominated styrene obtained by polymerization of brominated styrene, and

(D) 0.1 to 10% by weight of an antimony-containing compound and/or zinc-containing compound oxide, the components (A) to (D) totaling 100% by weight,

wherein, the bromine-based flame retardant has a number-average particle size of less than 0.90 $\mu$ m.

**Please replace the paragraph at page 7, line 12 with the following amended paragraph.**

The flame-retardant polyamide composition of the present invention comprises:

(A) 20 to 80% by weight of an aromatic polyamide, composed of recurring units of dicarboxylic acid component unit and diamine component unit, the former composed of 30 to 100% by mol of a terephthalic acid component unit and 0 to 70% by mol of an aromatic dicarboxylic acid component unit other than terephthalic acid and/or 0 to 70% by mol of a C<sub>4</sub>-C<sub>20</sub> aliphatic dicarboxylic acid component unit and the latter composed of an aliphatic diamine component unit and/or ~~and~~ an alicyclic diamine component unit; and having an MFR of 40 to 300g/10 minutes, determined at a load of 2,160g and at a temperature of 10°C plus melting point, and melting point exceeding 290°C;

(B) 5 to 50% by weight of an inorganic reinforcing agent,

(C) 5 to 40% by weight of a bromine-based flame retardant, containing at least one type of polybrominated styrene obtained by polymerization of brominated styrene, and

(D) 0.1 to 10% by weight of an antimony-containing compound and/or zinc-containing compound oxide, the components (A) to (D) totaling 100% by weight,

wherein, the polyamide composition has flame retardancy equivalent to V-0 determined in accordance with the UL-94 specification,

and the bromine-based flame retardant has a number-average particle size of less than  $0.90\mu\text{m}$  in the polyamide composition, when it is pelletized.

**Please replace the paragraph at page 13, line 8 with the following amended paragraph.**

The ~~flame-retarded~~ flame-retardant polyamide composition of the present invention can have very high flowability, resistance to heat and mechanical properties by combining the aromatic polyamide having an  $\text{MFR}_{\text{mp}+10}$  of 40g/10minutes or more, determined at  $10^{\circ}\text{C}$  plus melting point, preferably 50 to 250g/10 minutes, with the polybrominated styrene of specific melt viscosity, which is the main ingredient for the bromine-based flame retardant described later, having an  $\text{MFR}_{270^{\circ}\text{C}}$  of 40g/10minutes or more, determined at  $270^{\circ}\text{C}$ , preferably 50 to 350g/10 minutes.

Please replace the paragraph at page 13, line 26 with the following amended paragraph.

The above-described aromatic polyamide for the ~~flame-retarded~~ flame-retardant polyamide composition of the present invention may be an individual aromatic polyamide having a composition, MFR and melting point each in the above range, or composed of two or more types of aromatic polyamides of different properties. In the latter case, types and proportions of these polyamides are adjusted to have each required property in the above range as a whole.

Please replace the paragraph at page 14, line 4 with the following amended paragraph.

The aromatic polyamide for the ~~flame-retarded~~ flame-retardant polyamide composition of the present invention preferably has a viscosity of 60 to 110ml/g, more preferably 70 to 105ml/g, determined in accordance with ISO 307-1984(E), after it is extracted from the flame-retardant polyamide composition having been adjusted with the components described below.

Please replace the paragraph at page 14, line 9 with the following amended paragraph.

Viscosity of the polyamide for the present invention is determined in accordance with ISO 307-1984(E). More concretely,



the polyamide is extracted with concentrated sulfuric acid (96%) from the ~~flame-retarded~~ flame-retardant polyamide composition of the present invention, to prepare the solution of the concentrated sulfuric acid containing polyamide at 0.005g/ml. Viscosity of the polyamide means that of the above solution determined at 25°C by an Ubbelode type viscometer specified by ISO 3105.

**Please replace the paragraph at page 14, line 16 with the following amended paragraph.**

The ~~flame-retarded~~ flame-retardant polyamide composition of the present invention contains the aromatic polyamide at 20 to 80% by weight, preferably 25 to 70% by weight.

**Please replace the paragraph at page 14, line 20 with the following amended paragraph.**

The ~~flame-retarded~~ flame-retardant polyamide composition of the present invention contains an inorganic reinforcing agent in the above-described aromatic polyamide.

**Please replace the paragraph at page 22, line 4 with the following amended paragraph.**

First, each of the pellets of the ~~flame-retarded~~ flame-retardant polyamide composition of the present invention is

covered with an epoxy resin. The pellet is ground to form the plane in which the glass fibers are arranged along the plane. The ground pellet is etched, at room temperature, with methylene chloride in which it is immersed for 2 hours, to elute the bromine-based flame retardant out of the plane.

**Please replace the paragraph at page 23, line 2 with the following amended paragraph.**

Average particle size of the brominated flame retardant in a member for the electric and electronic devices, in particular connectors, made of the flame-retardant polyamide composition of the present invention can be determined in a manner similar to that for the brominated flame retardant in the pellet. The brominated flame retardant in the electric and electronic devices, in particular connectors, made of the ~~flame-retarded~~ flame-retardant polyamide composition of the present invention has an average particle size equivalent to that of the brominated flame retardant in the pellet, i.e., less than  $0.9\mu\text{m}$ , preferably  $0.01$  to  $0.8\mu\text{m}$ . The retardant particles are finely dispersed also in the formed article, without agglomerating with each other. In other words, the brominated flame retardant particles for the present invention are dispersed in the same condition in the formed article as in the unformed flame-retardant polyamide composition, without agglomerating with each

other during the forming step, e.g., injection molding or extrusion.

**Please replace the paragraph at page 24, line 10 with the following amended paragraph.**

The ~~flame-retarded~~ flame-retardant polyamide composition of the present invention, being dispersed with the bromine-based flame retardant having a number-average particle size of less than 0.9 $\mu$ m, shows excellent flowability, when molten under heating. The electric or electronic device member as the formed article of the flame-retardant polyamide composition of the present invention, in particular connector, has excellent toughness and resistance to heat.

**Please replace the paragraph at page 28, line 27 with the following amended paragraph.**

Each of the pellets of the ~~flame-retarded~~ flame-retardant polyamide composition was covered with an epoxy resin, and ground to form the plane in which the glass fibers were arranged along the plane. The ground pellet was etched, at room temperature, with methylene chloride in which it was immersed for 2 hours, to elute the bromine-based flame retardant out of the plane. Then, a Pt-Pd film was deposited over the plane by an ion sputterer (Hitachi Ltd., E-1030), and the plane left by

the bromine-based flame retardant was observed by a scanning electron microscope (Hitachi Ltd., S-800, magnification: 500 and 3,000). The presence of defects, e.g., void, was confirmed before the etching.